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ABSTRACT

The relationship between student library use and selected student characteristics, including fields of study, academic achievement, and progress toward a degree was investigated at a large, urban, nonresidential university with a full-time-equivalent student population of 15,000. Findings include the following: students with higher grade point averages and higher grades for the quarter have much greater likelihood for library use; the most consistently strong indicator of measured library use was the number of hours enrolled in a student's first quarter; graduate students exhibited the greatest degree of measured use; those attending under student visas had high levels of measured use; minority students, especially females, had substantially higher book checkout activity; students in courses with higher average grade point averages for enrolled students had considerably more measured library use; those majoring in the business fields or education exhibited much less use, but these students are known to make extensive use of periodicals; and enrollment in English, history, and political science was associated with higher levels of measured use. Implications of the findings include the following: it is unclear whether better students check out more books or whether more intense book checkout activity makes better students; evidence was found that library use is dependent upon the amount of free time available to a student; the higher levels of measured library use by foreign and minority students may result from less resources to purchase books, fewer community book resources, and/or a tendency to live closer to the library. (SW)

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THE RELATIONSHIP OF DOCUMENTED LIBRARY USE TO ACADEMIC ACHIEVEMENT, PROGRAM OF STUDY, AND PROGRESS TOWARDS A DEGREE

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This paper was presented at the Twenty-Second Annual Forum of the Association for Institutional Research held at the Denver Hilton Hotel in Denver, Colorado, May 16-19, 1982. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum papers.

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Abstract

THE RELATIONSHIP OF DOCUMENTED LIBRARY USE TO ACADEMIC ACHIEVEMENT, PROGRAM OF STUDY, AND PROGRESS TOWARD A DEGREE

This paper explores the relationship of academic performance and status, demographic background, course content, college major, and course type upon indicators of measured library use. Findings include:

Students with higher GPA's and higher grades for the quarter have much greater likelihood for library use.

The most consistently strong indicator of measured library use was the number of hours enrolled in a student's first quarter.

Graduate students exhibited the greatest degree of measured use.

Those attending under student visas had high levels of measured use.

Minority students, especially females, had substantially higher book check out activity.

Students in courses with higher average GPA's for enrolled students had considerably more measured library use.

Those majoring in the business fields or education exhibited much less use. However, these students are known to make extensive use of periodicals.

Enrollment in English, history, and political science was associated with higher levels of measured use.

College and university libraries are inherently vulnerable to the effects of inflation during a period of static or decreasing budgets. The library is a large cost center, is highly visible, and serves the entire spectrum of users in the academic community. The cost of books and journals is increasing more rapidly than the average rate of inflation; many library operations are labor-intensive and thus, expensive. These and other factors are providing impetus for library administrators to automate some functions--again, capital outlay of major proportions. The Wall Street Journal reported on September 24, 1981, that recent tuition increases at many prestigious universities were justified, in part, to offset the escalation in the cost of library operations.

While enrollment may decrease slightly without affecting the viability of an institution's scholarly purpose, any decrease in library resources is an absolute reduction in scholarly capacity. As competition for financial resources within the university becomes more heated, library staffs are motivated to identify more carefully their clientele and the scholarly requirements of library users, as well as to account for the utility value of the library resources which are required. To add or drop academic programs has an obvious impact on library services and acquisitions. General retrenchment or the deletion of a degree program may alter dramatically the acquisitions pattern for a library.

The purpose of this paper is to review the relationship between documented student library use and selected student characteristics, including fields of study, academic achievement, and progress towards a degree. Library use is defined as that activity measured and controlled by the

automated library circulation system. This study examines the difference in academic and personal characteristics of students who frequently check out books from the library as compared to the characteristics of students who seldom, if ever, check out library materials. Antecedent factors are analyzed which may explain differences in levels of library use. Specifically, it is the hope of the researchers that some light may be thrown upon the question of why many students do not--or need not--use the university library.

Review of the Literature

Many studies have focused upon the fundamental characteristics of library users and library use. The literature provides little indication of a systematic body of information concerning the characteristics of library users and library use, particularly in urban public institutions of higher education. In addition, the literature fails to address adequately non-traditional aspects of library use at public postsecondary institutions.

In a discussion of user studies and library planning, Martin (1976) cites the diversity of a university library's user population as a major problem in accommodating those users' needs for library materials. Tauber (1967) observed that in quantitative terms, the library spends a major part of its budget serving a relatively small segment of its potential clientele. (In qualitative terms, however, the influence or significance of habitual library users within their own milieu has not been determined.)

MacVean (1978) found that 42% of the faculty were non-users of the library book collection and other library services, thus suggesting that the library is generally underutilized by the faculty. Davis and Bentley (1979), in a study of varied faculty characteristics at three small private colleges, found that the length of time at the institution was frequently the most

statistically significant factor in shaping faculty perception and use of the libraries at these institutions. Sargent's study (1979) revealed that the pattern of use in a university library did not vary significantly with the day of the academic calendar, and that the pattern of student use did not differ significantly from the pattern of faculty use. At another university library, Barkey (1965) sampled book charges and compiled such demographic variables as class, sex, and grade point average. He found that freshmen borrowed more books than upperclassmen, and that two out of three students borrowed no books during the period under study. Prather and Clemons (1981) sampled individuals entering a state university library and found that 14% of the library users were not affiliated in any way with the university.

Data and Methods

The population for this study is a large urban nonresidential university with an FTE student population of 15,000. The university's comprehensive student record system file maintained by the Registrar's Office and the library automated circulation system records for Fall Quarter, 1980, comprised the data base for the study. The library circulation system recorded the book call number, student I.D. number, and the due date of the book. Several dependent variables were developed using these library circulation records. These included:

1) Users vs. nonusers;
2) Frequency (of visits when books were checked out);
3) Quarterly (total number of books checked out during the quarter);
4) Duration (number of calendar days from first to last check out);
5) Intensity (frequency of check outs times days of check outs); and
6) Propensity (days to the end of the quarter from first book check out).

The independent variables, derived from the university's comprehensive student record system, are indicators of academic status (GPA, credit hours attended and earned), demographics, course context, college major, and the course subject area. The data analysis for this study employs each dependent variable in multiple regressions. For the measures of frequency, quantity, duration, intensity, and propensity, two regressions are presented; one for all students and another for just those students who have checked books out during the quarter. In total, there are eleven multiple regressions.

Results

The unstandardized regression coefficients for the eleven multiple regressions are presented in Table 1. The standardized regression coefficients are given in Table 2. Both tables will be used in the interpretation of the multiple regressions.

In many cases, the impact of a given independent variable is quite consistent across the various measures of library use. Table 1 and Table 2 will then be reviewed in terms of the independent variables.

Academic Status

The academic status indicators were typically positively related to book check out activity with certain exceptions. The impact of these variables can be summarized as follows:

GPA. Both cumulative GPA and GPA for the quarter were positively related to library use. Thus, higher GPA's were indicative of more frequent visits to the library, greater quantity of books checked out, longer duration of use, more intensive use and quicker use during the quarter.

Attendance. All the various indicators of degree of attendance at the institution such as credit hours attempted and earned and rate

of attendance are positively related to measured library use. Of special importance is the number of credit hours attended during the student's first quarter at the university. This variable was consistently one of the best measures of library use even after controlling for GPA, demographic background, course context, major and course type. For instance, for each hour taken during their first quarter, there was a 2% increase in the probability of using the library.

Entrance Status. Students who began at the university as either beginning freshmen or remedial students had a tendency to check out fewer books. On the other hand, graduate students showed a strong likelihood of documented library use, tending to check out books about eight days sooner than undergraduate students.

Withdrawal State. Students who withdrew from classes tended to make substantially less use of the library. These students tended to be non-users. But, when they used the library, they tended to do so less frequently, with lower quantity, shorter duration, less intense, and waited until later in the quarter to begin their library use.

Demographics

These demographic background variables were included to determine if any anomalous situations might influence library use. Of all those measures included, there tended to be a strong positive indication of library use. Specifically, these variables show:

Age. The older the student, the greater the likelihood of withdrawing books from the library, especially in the duration and propensity measures.

Student Aid. Students on financial aid tend to make greater use of the library. Receiving veteran's benefits appears to be inconsequently related.

Foreign Status. Students attending under student visas make substantially greater use of the library in terms of quantity, duration and propensity.

Gender and Minority Status. Minority females are especially more likely to make active use of the library. The same is the case for minority males but at a lower level than that of minority females.

Course Context

These contextual variables are intended to be indicators of the context or environment that the students experienced. Their impact was quite clear and consistent. Specifically, it was found that:

Average Class GPA. Higher GPA's of the students in the class, independent of the individual student's GPA, showed a consistent and strong impact on book check outs. The influence of average class GPA was often greater than that of the student's individual GPA or GPA for the quarter. Clearly, being in a class with higher performing students is associated with greater use of the library.

Average Class Grade. A strong and consistent negative influence on book check out activity was found with average class grade. It appears that the higher the average grade in the class, the lower the library activity of the students.

Class Size. Smaller classes tended to result in greater measured library activity.

College Major

The college in which a student majors has a strong and consistent relationship with measured library use. It was found that students majoring in the business fields and teacher education withdrew substantially less books from the library in terms of frequency, quantity, duration, and propensity.

A similar but less strong tendency exists for those majoring in the health sciences. However, it should be noted that a survey of library patrons showed that a large number of the library's users are indeed from the fields found in business or teacher education. These students were most often seeking to use the non-circulating periodical collection.

Course Type

A number of the more frequently taken course types were included as variables in an attempt to control for the subject matter that might influence book check out activity. It was found that traditionally liberal arts subject areas were associated with more library use. A summary of the impact of various course types follows:

Accounting. Students in accounting courses tended to exhibit less library use.

Biology. These students made substantially less use of the library.

Decision Mathematics. Students taking these courses showed less library activity.

Economics. Those enrolled in economics courses tended to make slightly more than average library use.

English. Students taking English courses showed a much greater tendency to engage in library use. They made more frequent visits, checked out a greater quantity, used the library for a longer duration, more intensely, and started using the library earlier in the quarter.

Finance. Those enrolled in finance courses made substantially less use of the library.

History. Students taking history courses made the greatest use of the library. They were 17% more likely to use the library, checked out two more books than average and checked out their first book seven days earlier than average.

Information Systems. These students tended to make average use of the library.

Legal Studies. Students in these courses generally made less use of the library.

Mathematics. Students in mathematics courses made close to average use of the library.

Management. Those in management courses had slightly above average check out activity.

Marketing. Students in marketing courses made slightly less than average use of the library.

Philosophy. Students enrolled in philosophy courses had above average book check out activity.

Discussion

This analysis resulted in a number of clear and consistent findings. These findings are suggestive of a number of research and policy questions that might benefit from additional thought and analysis. Several implications are tentatively offered.

1. It is not clear whether better students check out more books or whether more intense book check out activity makes better students.

2. The higher levels of measured library use by foreign and minority students may often result from less resources to purchase books, fewer community book resources, and/or a tendency to live closer to the library. Foreign students may rely more heavily upon the university library because they are not as mobile as other students.

3. Classes with better performing students promote greater library use. However, it is not clear why classes with higher average grades and/or more students in the class have substantially less book check out activity.

Obviously, some instructional modes and subject matters promote more library use than others. The current restricted acquisitions budgets for practically all colleges and universities have a number of possible impacts upon certain disciplines and instructional practices. Given the high dependence of traditionally deprived groups upon book check out activity and the dependence of certain disciplines upon the library for their instructional process, diminished book purchases do not fall evenly upon all students or disciplines.

4. Perhaps the single most significant factor determining library use is the amount of "free time" or unstructured time available for the user. This conclusion is supported by several variables. The strongest support comes from the variable called "Hours First Quarter." This variable was chosen to measure the intention of the beginning student. The authors reasoned that students who intended to go to college as traditional, full time students would indicate their degree of commitment by registering for more hours their first quarter. On the other hand, students who had a greater commitment to some other activity such as their present job, would plan to take less hours per quarter and hence, less hours their first quarter.

With a standardized coefficient of .19, "Hours First Attended" has the greatest relative influence of all the variables in the "User Versus Non-user" regression equation. The unstandardized coefficients show that a one hour increase in "Hours First Attended" will increase the probability of using the library to check out books by .02, while increasing the number of books checked out for all students by a factor of .58. These findings substantiate the assertion that traditional full time students are more likely to use the university library.

Additional evidence that library use is dependent upon the amount of

free time available to a student comes from the variables that indicate "College Majoring In." These variables show that students in the professional programs of business, education, and health sciences are less likely to use the library than students in the traditional liberal arts programs. Business students in particular, with a standardized coefficient of -.12 in the "User Versus Non-user" progression equation are unlikely to check out library books. Since the regression equation controls for many of the business course types as well as for academic and demographic variables including the above mentioned "Hours First Attended," an explanation for the library use behavior of business students must be independent of these controlled variables.

One explanation could be that business students, and to a lesser extent othr career-oriented students, have more clearly defined academic goals. These goals preclude the search for ideas, knowledge, and information not prescribed by their chosen field. Such a search may be more typical of those who have not yet chosen a definite professional path. Book reading, in other words, may typify college students who are still searching for ideas about what they should do in life and what is important in life. The leisure to address such existential issues depends on free time.

5. Another tentative conclusion one may draw from the data is that many of the disciplines within the colleges of education, business, and health sciences are journal-dependent. Stated another way, those disciplines rely upon materials which are not taken from the library and, thus, are not controlled through the automated circulation system. The low documented book use for students in accounting, for instance, may be because much of their source material is in the format of loose-leaf services providing legal and tax information. The sciences, including the health sciences, are reliant

upon journal literature. Again, this is a format which does not leave the library and would not be documented through the library circulation system.

6. The present study shows a modest positive relationship between "Rate of Attendance" and library book check outs. "Rate of Attendance" is measured independent of "College Majoring In" and "First Hours Attended." This means that the positive relationship with library check outs does not necessarily contradict the above conjecture that arts and sciences students are both more likely to have lower rates of attendance and high book use. On the contrary, the career-oriented factor is controlled and "Rate of Attendance" may be seen as persistence in the academic endeavor, whether that endeavor is searching for a role in life or pursuing an already established goal. Those students who are more persistent will have slightly greater library book use. Moreover, to the extent that persistence is indicative of less conflict with other time demands, the positive relationship between "Rate of Attendance" and book check outs supports the assertion that free time is an important factor in library book use.

One reason that the arts and sciences standardized coefficient of .006 on the "User Versus Non-user" regression is not higher may be the heterogeneity of arts and sciences students. The arts and sciences programs run the gamut from the fine arts and humanities through the physical sciences to pre-professional majors. The course type variables help to identify which elements of the arts and sciences programs influence library book check outs. The variables show an interesting gradient that seems to follow the historical development of modern universities. The humanities, for example, which are closest to the earlier liberal arts tradition, have the greatest impact on book check outs. The unstandardized coefficients show that each English course taken by a student increases the number of book check outs by a factor

of 2.46 and each history course and political science course increase book check outs by factors of 2.46 and 2.16, respectively. Book use generated by the social sciences seems to reflect the divergence of these disciplines from their liberal arts origins. Sociology and psychology courses generate less book check outs than humanities courses. Philosophy appears as an anomaly; it would seem to be associated with the original humanities, but, in terms of book check outs, falls somewhat below the social sciences. At the far end of the arts and sciences spectrum, taking a biology or mathematics course has a negative impact on book check outs. The diversity of the impact generated by arts and sciences courses indicates the heterogeniety of the arts and sciences program. In addition, the gradient from the traditional liberal arts programs to the more scientific and career-oriented disciplines within arts and sciences is one of decreasing library book use.

7. Educational policy related to free time and library book use should decide the extent to which prescribed course content is compatible with what is desirable in a college education. Do "canned" textbook courses provide the best education for undergraduates or should a more flexible approach that emphasizes individual research and hence, book reading and library use be promoted? Is there something inherent in the subject matter of science or career courses that makes library book use obsolete or could these courses be improved if their subject matter were not so clearly defined?

These policy questions have a somewhat ironic tone when the historical picture is considered. The emergence of the university model in American higher education after the Civil War initially had a liberating effect on college study. The dry, recitation method of studying was abandoned in favor of concepts such as "freedom to learn and freedom to teach" imported from the German universities. At the same time, the university library achieved new

importance. The old method of teaching did not need extensive and modern library collections; it used textbooks. The new research orientation and more elective curricula did need extensive library collections. However, concurrent with this development, the colleges also broadened from a curriculum centered on liberal arts to a more practical, applied and scientific curriculum. Such courses may have a more prescribed content. For example, science courses may require a progressive mastery of a systematic body of knowledge; applied courses, such as business may be based more on proven experience and descriptive laws than on theoretical considerations. Being more prescribed, these new courses were more amenable to textbook presentation and gave the student less flexibility and time for independent study. Such flexibility is perhaps more typical of liberal arts courses whose origins are in an earlier, more elitist concept of college where leisure time was a precondition for study. Thus, the emergence of the modern university seems to have had an ironic effect on library book usage. On the one hand, the new diversity, independent study and research orientation created the need for large modern book collections. On the other hand, some of the subject areas that arose from this new direction, may make more heavy use of prescribed learning in textbooks than independent study in the library.

That individual scholarship is related to library book use is supported by the data on graduate student book use. The unstandardized coefficients show that being a graduate student increases the number of books checked out by a factor of 2.87 when the total population is considered. Library book use is clearly related to advanced study. A question to be considered, however, is whether the method of independent study associated with both being a graduate student and library book use, would not benefit undergraduate students. It is possible that undergraduates must first be taught

the basic skills and textbooks are better at presenting this basic material. This argument, however, puts higher education back to its medieval origins by emphasizing content over process and the exercise and discipline of mental faculties over critical inquiry.

8. One clear implication for university and library administrators surrounds the rationale and process for allocating library book budgets. Should the major portion of library funds be devoted to those disciplines which rely upon the library for their information resources? The question, at base, is much more complex, however. Since the major portion of a research library's acquisitions dollars pay for serials, a necessary task for future research is to survey the use of the library's serial-journal collection. The researchers acknowledge that use is not the only criterion to be considered in evaluating titles for retention and/or purchase, because a research collection is, by definition, one which is characterized by depth as well as breadth. The criterion of use may be important, however, in determining which of many titles must be cancelled if budget shortfalls occur.

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Table 1

UNSTANDARDIZED REGRESSION COEFFICIENTS FOR INDICATORS OF MEASURED LIBRARY USE USING ACADEMIC STATUS, DEMOGRAPHIC BACKGROUND, CONTEXTUAL FACTORS, COLLEGE MAJORING IN, AND COURSE TYPE

	User vs. Nonuser	Frequency (Frequency of Visits)		Quantity (Quantity of Books Checked Out)		Duration (Number of Days from First to Last Checkout)		Intensity (Frequency Times Days)		Propensity Days to End of Quarter for First Checkout	
Variables		All Students	Users	All Students	Users	All Students	Users	All Students	Users	All Students	Users
Academic Status											
Cumulative GPA	.01	.06	.11	.21	.59	.62	1.69	.03	.09	1.32	3.16
GPA for Quarter	.03	.09	.08	.30	.24	.82	.72	.04	.03	.62	-1.56
Hours First Quarter	.02	.07	.04	.22	.16	.59	.45	.03	.02	.87	.10
Hours Attended	.0005	.002	.003	.01	.02	.03	.04	.002	.003	.04	.04
Hours Earned	.0004	.002	.001	.008	.007	.02	.01	.001	.001	.02	.01
Rate Attended	.02	.11	.14	.40	.43	1.39	1.98	.10	.18	1.66	1.85
Rate Withdrew	-.12	-.30	-.32	-.62	-.30	-2.49	-4.06	-.10	-.19	-2.52	7.41
Beginning Freshmen	-.02	-.07	-.07	-.37	-.59	-.54	-.46	-.04	-.05	-.78	-.36
Beginning Remedial Students	-.04	-.07	-.02	-.26	-.27	-.77	-.99	-.03	-.007	-1.34	-.80
Graduate	.12	.70	.84	2.90	3.96	7.21	9.36	.46	.71	7.76	5.21
Demographics											
Age	.001	.007	.009	.03	.03	.10	.17	.004	.006	.14	.20
Veteran Benefits	-.008	-.01	.03	-.12	.56	-.09	.75	-.004	.03	.72	2.27
Financial Aid	.05	.19	.12	.47	.12	1.88	1.64	.10	.11	3.23	2.52
Foreign Status	.08	.54	.67	2.19	3.06	4.91	6.03	.33	.48	5.30	3.10
Minority Female	.10	.30	.24	1.40	2.01	2.57	2.56	.10	.11	3.94	1.27
Minority Male	.05	.26	.39	1.17	2.26	2.28	3.93	.12	.24	2.59	1.80
Non-Minority Female	.02	.06	.02	.49	.83	.55	.23	.01	-.03	1.02	.48
Course Context											
Average GPA	.03	.12	.16	.45	.84	1.16	2.15	.07	.15	1.72	2.71
Average Grade	-.007	-.06	-.08	-.30	-.45	-.68	-.89	-.05	-.08	-.84	-.95
Class Size	-.001	-.005	-.003	-.02	-.01	-.05	-.03	-.003	-.002	-.05	-.002
College Majoring In											
Arts & Sciences	.007	.05	.06	-.21	-.66	.43	.45	.06	.11	.80	1.07
Business Administration	-.12	-.48	-.45	-1.88	-2.19	-4.89	-5.65	-.23	-.29	-5.62	-1.73
Education	-.08	-.40	-.40	-1.36	-1.38	-4.25	-5.08	-.22	-.29	-4.98	-3.31
Health Sciences	-.05	-.19	-.19	-1.15	-1.84	-1.91	-2.34	-.09	-.14	-1.90	--
Course Type											
Accounting	-.04	-.02	.04	-.10	-.20	-.19	-.25	.03	.08	-1.00	1.09
Biology	-.05	-.15	-.06	-.54	-.61	-1.55	-1.12	-.06	-.04	-2.23	-.44
Decision Mathematics	-.04	-.07	-1.0	-.24	-.55	-.39	-.41	.004	--	-.76	1.96
Economics	.01	.10	.08	.47	.61	.83	.72	.07	.08	.80	.63
English	.15	.56	.46	2.48	3.03	4.63	4.20	.26	.32	6.79	2.91
Finance	-.06	-.23	-.35	-1.12	-2.44	-2.07	-3.28	-.12	-.26	-2.53	-.62
History	.17	.62	.42	2.47	2.42	5.66	4.56	.30	.30	7.33	1.92
Information Sciences	-.04	-.02	.07	-.26	-.81	-.20	-.14	.02	.05	-.99	.90
Legal Studies	-.03	-.09	-.22	-.34	-1.26	-.93	-3.20	-.08	-.10	-.54	.29
Mathematics	-.01	-.06	-.08	-.27	-.54	-.65	-.86	-.03	-.05	--	1.64
Management	.04	.06	-.16	.29	-.34	.12	-2.41	--	-.15	.53	-2.80
Marketing	-.008	-.09	-.28	-.56	-1.81	-1.02	-3.12	-.04	-.16	-.66	-1.14
Philosophy	.06	.39	.49	1.62	2.38	3.67	4.95	.25	.41	3.93	2.94
Political Science	.18	.69	.46	2.18	1.58	6.38	5.07	.33	.31	7.54	1.23
Psychology	.09	.48	.32	1.76	1.17	4.44	2.59	.32	.29	5.73	2.55
Sociology	.11	.43	.27	1.75	1.59	4.02	2.91	.23	.22	4.77	.34
Constant	-.10	-.85	.48	-3.56	-1.36	-10.02	-5.61	-.57	-.66	-11.28	14.52
R^2	.10	.12	.10	.09	.09	.11	.10	.10	.11	.10	.08
Standard Error of Estimate	.46	1.55	1.71	6.72	9.07	16.26	21.12	.94	1.33	21.86	20.25
N	41,091	41,091	16,124	41,091	16,124	41,091	16,124	41,091	16,124	41,091	16,124

TABLE 3

STANDARDIZED REGRESSION COEFFICIENTS FOR INDICATORS OF MEASURED LIBRARY USE USING ACADEMIC STATUS, DEMOGRAPHIC BACKGROUND, CONTEXTUAL FACTORS, COLLEGE MAJORING IN, AND COURSE TYPE

Variables	User vs. Nonuser	Frequency (Frequency of Visits)		Quantity (Quantity of Books Checked Out)		Duration (Number of Days from First to Last Checkout)		Intensity (Frequency Times Days)		Propensity (Days to End of Quarter for First Checkout)	
		All Students	Users	All Students	Users	All Students	Users	All Students	Users	All Students	Users
Academic Status											
Cumulative GPA	.03	.04	.06	.03	.06	.04	.07	.03	.06	.06	.14
GPA for Quarter	.07	.07	.05	.06	.03	.06	.04	.05	.03	.03	-.03
Hours First Quarter	.19	.17	.09	.13	.07	.14	.08	.11	.07	.16	.02
Hours Attended	.05	.07	.08	.08	.10	.08	.11	.08	.11	.09	.02
Hours Earned	.05	.07	.05	.07	.05	.06	.04	.07	.05	.06	.03
Rate Attended	.02	.02	.02	.02	.01	.02	.02	.03	.03	.02	.02
Rate Withdrew	-.04	-.03	-.02	-.01	-.004	-.02	-.02	-.02	-.02	-.02	.05
Beginning Freshmen	-.01	-.02	-.02	-.02	-.02	-.01	-.08	-.02	-.01	-.01	-.007
Beginning Remedial Students	-.02	-.01	-.002	-.01	-.07	-.01	-.01	-.001	.001	-.02	-.01
Graduate	.10	.18	.20	.18	.18	.18	.18	.20	.22	.15	.11
Demographics											
Age	.02	.03	.03	.03	.03	.04	.05	.03	.03	.04	.07
Veteran Benefits	--	-.002	.004	.004	.01	-.001	.08	-.001	.006	.008	.03
Financial Aid	.04	.04	.03	.03	.06	.04	.03	.04	.03	.05	.05
Foreign Status	.03	.06	.07	.06	.06	.06	.05	.07	.07	.05	.03
Minority Female	.06	.06	.05	.06	.07	.05	.04	.03	.03	.05	.02
Minority Male	.03	.04	.04	.04	.06	.03	.04	.03	.04	.03	.02
Non-minority Female	.02	.02	.005	.03	.04	.02	.005	.005	-.009	.02	.01
Contextual											
Average GPA	.03	.04	.05	.04	.05	.04	.05	.04	.06	.04	.07
Average Grade	-.01	-.03	-.04	-.03	-.04	-.03	-.03	-.04	-.04	-.03	-.04
Class Size	-.05	-.07	-.04	-.05	-.03	-.06	-.04	-.06	-.04	-.05	-.003
College Majoring In											
Arts & Sciences	.006	.01	.01	-.01	-.03	.01	.01	.03	.04	.02	.02
Business Administration	-.12	-.14	-.11	-.13	-.11	-.14	-.12	-.11	-.10	-.12	-.04
Education	-.06	-.09	-.08	-.07	-.05	-.09	-.09	-.08	-.08	-.08	-.06
Health Sciences	-.03	-.03	-.03	-.04	-.05	-.03	-.03	-.02	-.03	-.02	--
Course Type											
Accounting	-.02	-.003	.003	-.003	-.004	-.002	-.002	.007	.01	-.009	.009
Biology	-.02	-.02	-.006	-.01	-.01	-.02	-.009	.01	-.005	-.02	-.004
Decision Mathematics	-.01	-.007	-.007	-.006	-.008	-.004	-.003	--	--	-.006	.01
Economics	.005	.01	.007	.01	.01	.008	.005	.01	.09	.006	.005
English	.08	.08	.07	.09	.09	.07	.05	.07	.06	.07	.04
Finance	-.01	-.02	-.02	-.02	-.03	-.01	-.02	.01	-.02	-.01	-.003
History	.06	.07	.05	.06	.05	.06	.04	.06	.04	.06	.02
Information Sciences	-.01	-.002	.005	-.006	-.01	-.002	-.001	.004	.005	-.007	.006
Legal Studies	-.008	-.006	-.01	-.006	-.01	-.006	-.01	-.001	-.007	-.003	.001
Mathematics	-.005	-.007	-.008	-.007	-.01	-.007	-.007	-.006	-.006	--	.01
Management	.01	.006	-.02	.007	-.006	.001	-.02	--	-.02	.004	-.02
Marketing	-.002	-.008	-.02	-.01	-.02	-.008	-.02	-.006	-.01	-.004	-.007
Philosophy	.01	.03	.03	.02	.03	.02	.03	.03	.03	.02	.02
Political Science	.06	.07	.05	.05	.03	.06	.04	.05	.04	.05	.01
Psychology	.03	.05	.04	.05	.03	.05	.03	.06	.04	.05	.03
Sociology	.04	.04	.03	.04	.03	.04	.02	.04	.03	.03	.003
R^2	.10	.12	.10	.09	.09	.11	.10	.10	.11	.10	.08
N	41,091	41,091	16,124	41,091	16,124	41,091	16,124	41,091	16,124	41,091	16,124